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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,521	06/09/2006	Philippe Robert	128303	1059
25944 7590 01/02/2009 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850				
EXAMINER				
CHU, CHRIS C				
ART UNIT		PAPER NUMBER		
2815				
MAIL DATE		DELIVERY MODE		
01/02/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/582,521

**Applicant(s)**

ROBERT, PHILIPPE

**Examiner**

CHRIS C. CHU

**Art Unit**

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 September 2008.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16, 18 and 21 - 33 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 29 and 31 is/are allowed.  
6) ☒ Claim(s) 16, 18, 21 - 28, 30, 32 and 33 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's amendment filed on September 30, 2008 has been received and entered in the case.

### ***Claim Objections***

2. Claim 33 is objected to because of the following informalities:
  - (A) In claim 33, line 2, before "electromechanical microsystem" delete [a] and insert -an--.Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 16, 18, 21, 22, 23, 26 – 28, 30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reichenbach et al. (U. S. Pub. No. 2004/0,065,932) in view of Mastromatteo et al. (U. S. Pat. No. 6,446,326).

Regarding claims 16 and 18, Reichenbach et al. discloses in e.g., Fig. 12 microcomponent (the micro component in e.g., Fig. 12) comprising a hermetically-sealed

microcavity (26; page 3, paragraph 0043, lines 3 and 4), delineated by a cover (16; page 3, paragraph 0039, lines 5 – 7) in which at least one hole (24; page 3, paragraph 0042, line 2 and see e.g., Fig. 5) is formed, and, on the cover (16), a sealing layer (34; page 4, paragraph 0049, line 3) hermetically sealing the microcavity (28; page 4, paragraph 0049, lines 1 – 3), the microcomponent comprising, under the sealing layer (34), a plug (32; page 4, paragraph 0046, lines 1 – 3) covering the hole (24) and a part of the cover (16) over the periphery of the hole (24; see e.g., Fig. 12), the sealing layer (34) and the plug (32) being formed by distinct materials (page 4, paragraph 0046, lines 1 – 2 and page 4, paragraph 0049, lines 3 – 5). Reichenbach et al. does not disclose the material of the plug being polymer (polyimide; claim 18) or phosphosilicate glass. Mastromatteo et al. teaches in e.g., Fig. 6 a material of a plug (45a; column 5, line 13 and see e.g., Fig. 6) being polymer (column 5, lines 10 – 12). It would have been obvious to one of ordinary skill in the art at the time when the invention was made to apply the polyimide of Mastromatteo et al. as the specific material to form the plug of Reichenbach et al. as taught by Mastromatteo et al. to provide an organic material that are excellent in heat resistance and in radiation resistance (column 5, lines 10 – 12).

Regarding claim 21, Reichenbach et al. discloses in e.g., Figs. 1 – 12 the dimension of the hole (24) being smaller than 5 micrometers (page 4, paragraph 0048, lines 9 – 10).

Regarding claim 22, Reichenbach et al. discloses in e.g., Fig. 12 the hole (24) being arranged on the highest part of the microcavity (26; see e.g., Fig. 12).

Regarding claim 23, Reichenbach et al. discloses in e.g., Fig. 12 a plurality of holes (see e.g., Fig. 12).

Regarding claim 26, Reichenbach et al. discloses in e.g., Fig. 12 the plug (32) being non-

hermetical (page 4, paragraph 0048, lines 1 – 14).

Regarding claim 27, Reichenbach et al. discloses in e.g., Fig. 12 the material of the sealing layer (34) being selected from silicon dioxide, silicon nitride (page 4, paragraph 0049, lines 3 – 5) and metals.

Regarding claim 28, Reichenbach et al. discloses in e.g., Figs. 1 – 12 method for production of a hermetically-sealed microcavity of a microcomponent according to claim 16, successively comprising

- deposition of a sacrificial layer (the sacrificial layer; page 3, paragraph 0043, line 1) on a substrate (10; page 3, paragraph 0039, line 1),
- deposition of a first layer (16) forming the cover, on the substrate (10) and sacrificial layer (the sacrificial layer),
- etching, in the cover, of at least one hole (24) opening out onto the sacrificial layer (the sacrificial layer; page 3, paragraphs 0041 – 0043),
- removal of the sacrificial layer (the sacrificial layer; page 3, paragraph 0043), via the hole (24), so as to create the microcavity (26; see e.g., fig. 5),
- deposition of the sealing layer (34; see e.g., Fig. 11), so as to seal the microcavity hermetically (26), method comprising deposition of the plug (32) covering the hole (24) and a part of the cover over the periphery of the hole (24; see e.g., Fig. 10), after the sacrificial layer (the sacrificial layer) has been removed (Fig. 5) and before the sealing layer (34) is deposited (see e.g., Fig. 11).

Regarding claim 30, Reichenbach et al. discloses in e.g., Figs. 1 – 12 the plug (32) being made of a porous material (page 4, paragraph 0048 and page 6, paragraph 0063, lines 1 – 8).

Regarding claim 32, Reichenbach et al. discloses in e.g., Figs. 1 – 12 the method comprising a pumping step of the gas contained in the microcavity (26), through the porous material (32), before the sealing layer (34) is deposited (page 4, paragraphs 0047 and 0049).

5. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reichenbach et al. and Mastromatteo et al. as applied to claim 16 above, and further in view of Murari et al. (U. S. Pat. No. 6,779,247).

Regarding claims 24 and 25, while Reichenbach et al. and Mastromatteo et al. disclose the use of the plug, Reichenbach et al. and Mastromatteo et al. do not disclose the thickness (claim 24) and shape (claim 25) of the plug. Murari et al. teaches in e.g., Fig. 15 the thickness of a plug (40; column 5, lines 32 – 33) being comprised between 2 and 6 micrometers (column 5, lines 34 – 36) and the plug (40) comprising sloping sides (column 5, lines 34 – 37 and see e.g., Fig. 15). It would have been obvious to one of ordinary skill in the art at the time when the invention was made to further apply the thickness and the shape of Murari et al. as the specific thickness and the shape to form the plug of Reichenbach et al. and Mastromatteo et al. as taught by Murari et al. to seal the top of the cavities and to prevent penetrate the cavities (column 5, lines 39 – 42).

6. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reichenbach et al. and Mastromatteo et al. as applied to claim 16 above, and further in view of Wan (U. S. Pat. No. 7,265,429).

While Reichenbach et al. and Mastromatteo et al. disclose the use of the microcavity, Reichenbach et al. and Mastromatteo et al. do not disclose the microcavity enclosing [a] --an--

electromechanical microsystem. Wan teaches in e.g., Fig. 61 a microcavity (36; column 9, line 40) enclosing an electromechanical microsystem (column 8, lines 55 – 56 and see e.g., Fig. 6A). It would have been obvious to one of ordinary skill in the art at the time when the invention was made to further apply the electromechanical microsystem of Wan as the specific device to form enclosed by the microcavity of Reichenbach et al. and Mastromatteo et al. as taught by Wan to avoid unnecessary exposure to the environment and fabricate in one process sequence (column 8, lines 49 – 52).

***Allowable Subject Matter***

7. Claims 29 and 30 are allowed (see the previous Office action for the reasons of allowance).

***Response to Arguments***

8. Applicant's arguments with respect to claim 16 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRIS C. CHU whose telephone number is (571)272-1724. The examiner can normally be reached on 11:30 - 8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Chris C. Chu  
Primary Examiner  
Art Unit 2815

/Chris C. Chu/  
Primary Examiner, Art Unit 2815  
Monday, December 29, 2008